GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: June 12, 2003, 15:26:44 ; Search time 11 Seconds
(without alignments)
71.641 Million cell updates/sec

Title: US-09-869-540A-2
Perfect score: 113
Sequence: 1 DFDMLRCMLGRVYRPCWQV 19

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 112892 seqs, 41476328 residues

Total number of hits satisfying chosen parameters: 112892

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_40:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	113	100.0	165	1	MLCH_HUMAN	P20382 homo sapien
2	113	100.0	165	1	MLCH_RAT	P14200 rattus norv
3	113	100.0	166	1	MLCH_MOUSE	P56942 mus musculu
4	89	78.8	78	1	MLC2_HUMAN	Q16048 homo sapien
5	87	77.0	132	1	MLC1_ONCKE	P19713 oncorhynchu
6	87	77.0	132	1	MLC1_ONCKI	P56943 oncorhynchu
7	87	77.0	132	1	MLC1_ONCMY	P33745 oncorhynchu
8	87	77.0	132	1	MLC1_ONCTS	P17640 oncorhynchu
9	87	77.0	132	1	MLC2_ONCKE	P19714 oncorhynchu
10	87	77.0	136	1	MLCH_OREMO	P49794 oreochromis
11	43.5	38.5	315	1	ISTA_SHISO	P16944 shigella so
12	43.5	38.5	426	1	S6AA_HUMAN	P53796 homo sapien
13	43.5	38.5	635	1	S6A8_HUMAN	P48029 homo sapien
14	43.5	38.5	635	1	S6A8_RABIT	P31661 oryctolagus
15	43.5	38.5	635	1	S6A8_RAT	P28570 rattus norv
16	43	38.1	3206	1	POLG_PSBMV	P29152 p genome po
17	42.5	37.6	351	1	HOXN_ALCEU	P23516 alcaligenes
18	42.5	37.6	635	1	S6A8_BOVIN	O18875 bos taurus
19	42	37.2	577	1	VGLE_PRVRI	P08354 pseudorabie
20	42	37.2	745	1	PERM_HUMAN	P05164 homo sapien
21	41.5	36.7	358	1	Y4EE_RHISN	P55428 rhizobium s
22	41.5	36.7	645	1	ZF93_MOUSE	Q61116 mus musculu
23	41	36.3	124	1	CD59_RABIT	O77541 oryctolagus
24	41	36.3	373	1	SRB3_HUMAN	Q9ns66 homo sapien
25	41	36.3	373	1	SRB3_RAT	Q9jjh2 rattus norv
26	41	36.3	500	1	PAO_MAIZE	O64411 zea mays (m
27	41	36.3	762	1	KGP2_HUMAN	Q13237 homo sapien
28	41	36.3	762	1	KGP2_RAT	Q64595 rattus norv
29	41	36.3	890	1	WFS1_HUMAN	O76024 homo sapien
30	41	36.3	890	1	WFS1_MOUSE	P56695 mus musculu
31	40	35.4	173	1	CRG2_CYPCA	P10044 cyprinus ca
32	40	35.4	288	1	RFL2_HUMAN	O75678 homo sapien
33	40	35.4	472	1	GLGA_ANASP	Q8yvu5 anabaena sp
34	40	35.4	726	1	PRTP_HSV6U	P52384 human herpe
35	40	35.4	850	1	PRTP_HCMVA	P16724 human cytom
36	40	35.4	1705	1	PTPO_MOUSE	P70289 mus musculu
37	40	35.4	1711	1	PTPO_RAT	Q64612 rattus norv
38	40	35.4	3461	1	RELN_MOUSE	Q60841 mus musculu
39	39.5	35.0	768	1	BAR1_RAT	Q9qzh2 rattus norv
40	39.5	35.0	777	1	BAR1_HUMAN	Q99728 homo sapien
41	39	34.5	111	1	QRI5_YEAST	P32344 saccharomyc
42	39	34.5	170	1	HPAC_SALDU	Q9rpu2 salmonella
43	39	34.5	170	1	HPAC_SALTI	Q8z7q5 salmonella
44	39	34.5	170	1	HPAC_SALTY	Q8zq51 salmonella
45	39	34.5	279	1	NAPG_HAEIN	P44652 haemophilus

ALIGNMENTS

RESULT 1
MLCH_HUMAN
ID MLCH_HUMAN STANDARD; PRT; 165 AA.
AC P20382; Q16044;
DT 01-FEB-1991 (Rel. 17, Created)
DT 15-JUL-1999 (Rel. 38, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Pro-MCH precursor [Contains: Neuropeptide-glycine-glutamic acid (NGE)
DE (Neuropeptide G-E); Neuropeptide-glutamic acid-isoleucine (NEI)
DE (Neuropeptide E-I); Melanin-concentrating hormone (MCH)].
GN PMCH OR MCH.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Hypothalamus;
RX MEDLINE=91125371; PubMed=2149166;
RA Presse F., Nahon J.-L., Fischer W.H., Vale W.;
RT "Structure of the human melanin concentrating hormone mRNA.";
RL Mol. Endocrinol. 4:632-637(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE=Breast cancer;
RX MEDLINE=93316802; PubMed=8326825;
RA Breton C., Schorpp M., Nahon J.-L.;
RT "Isolation and characterization of the human melanin-concentrating
RT hormone gene and a variant gene.";
RL Brain Res. Mol. Brain Res. 18:297-310(1993).
RN [3]
RP PROCESSING.
RX MEDLINE=99156937; PubMed=10037747;
RA Viale A., Ortola C., Hervieu G., Furuta M., Barbero P., Steiner D.F.,
RA Seidah N.G., Nahon J.-L.;
RT "Cellular localization and role of prohormone convertases in the
RT processing of pro-melanin concentrating hormone in mammals.";
RL J. Biol. Chem. 274:6536-6545(1999).
RN [4]
RP TISSUE SPECIFICITY.
RX MEDLINE=97334402; PubMed=9191099;
RA Viale A., Zhixing Y., Breton C., Pedeutour F., Coquerel A., Jordan D.,
RA Nahon J.-L.;
RT "The melanin-concentrating hormone gene in human: flanking region
RT analysis, fine chromosome mapping, and tissue-specific expression.";
RL Brain Res. Mol. Brain Res. 46:243-255(1997).
CC -!- FUNCTION: MCH may act as a neurotransmitter or neuromodulator in a
CC broad array of neuronal functions directed toward the regulation
CC of goal-directed behavior, such as food intake, and general
CC arousal. May also have a role in spermatocyte differentiation.
CC -!- TISSUE SPECIFICITY: PREDOMINANTLY EXPRESSED IN LATERAL
CC HYPOTHALAMUS, ALSO DETECTED IN PALLIDIUM, NEOCORTEX AND
CC CEREBELLUM. ALSO FOUND IN THYMUS, BROWN ADIPOSE TISSUE, DUODENUM
CC AND TESTIS (SPERMATOGONIA, EARLY SPERMATOCYTES AND SERTOLI CELLS).
CC NO EXPRESSION IN PERIPHERAL BLOOD. IN BRAIN EXCLUSIVELY MATURE MCH
CC AND NEI PEPTIDES ARE PRESENT. IN PERIPHERAL TISSUES A LARGE

```
CC       PRODUCT, ENCOMPASSING THE NEI AND MCH DOMAINS OF THE PRECURSOR, IS
CC       FOUND PREDOMINANTLY.
CC   -!- PTM: DIFFERENTIALLY PROCESSED IN THE BRAIN AND IN PERIPHERAL
CC       ORGANS PRODUCING TWO NEUROPEPTIDES; NEI AND MCH. A THIRD PEPTIDE,
CC       NGE, MAY ALSO BE PRODUCED. PREFERENTIAL PROCESSING IN NEURONS BY
CC       PROHORMONE CONVERTASE 2 (PC2) GENERATES NEI. MCH IS GENERATED IN
CC       NEURONS OF THE LATERAL HYPOTHALMIC AREA BY SEVERAL PROHORMONE
CC       CONVERTASES INCLUDING PC1/3, PC2 AND PC5/6.
CC   -!- PTM: MCH is a cyclic petide.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; M57703; AAA63214.1; -.
DR   EMBL; S63697; AAB27493.1; -.
DR   PIR; A34551; A34551.
DR   Genew; HGNC:9109; PMCH.
DR   MIM; 176795; -.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Amidation; Spermatogenesis.
FT   SIGNAL        1     21       POTENTIAL.
FT   CHAIN        22    165       PRO-MCH.
FT   PEPTIDE     110    128       NGE (POTENTIAL).
FT   PEPTIDE     131    143       NEI.
FT   PEPTIDE     147    165       MELANIN-CONCENTRATING HORMONE.
FT   MOD_RES     143    143       AMIDATION (G-144 PROVIDE AMIDE GROUP)
FT                                (BY SIMILARITY).
FT   DISULFID    153    162       BY SIMILARITY.
FT   CONFLICT     42     42       F -> S (IN REF. 2).
FT   CONFLICT    104    106       PYL -> GYQ (IN REF. 1).
FT   CONFLICT    113    113       D -> A (IN REF. 2).
SQ   SEQUENCE   165 AA;  18723 MW;  D639E89388637244 CRC64;

  Query Match             100.0%;  Score 113;  DB 1;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 4.3e-11;
  Matches   19;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 DFDMLRCMLGRVYRPCWQV 19
              |||||||||||||||||||
Db        147 DFDMLRCMLGRVYRPCWQV 165


RESULT 2
MLCH_RAT
ID   MLCH_RAT       STANDARD;      PRT;   165 AA.
AC   P14200;
DT   01-JAN-1990 (Rel. 13, Created)
DT   01-JAN-1990 (Rel. 13, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Pro-MCH precursor [Contains: Neuropeptide-glycine-glutamic acid (NGE)
DE   (Neuropeptide G-E); Neuropeptide-glutamic acid-isoleucine (NEI)
DE   (Neuropeptide E-I); Melanin-concentrating hormone (MCH)].
GN   PMCH OR MCH.
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Hypothalamus;
RX   MEDLINE=90005146; PubMed=2477226;
RA   Nahon J.-L., Presse F., Bittencourt J.C., Sawchenko P.E., Vale W.;
RT   "The rat melanin-concentrating hormone messenger ribonucleic acid
RT   encodes multiple putative neuropeptides coexpressed in the
RT   dorsolateral hypothalamus.";
RL   Endocrinology 125:2056-2065(1989).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=91083836; PubMed=2261081;
RA   Thompson R.C., Watson S.J.;
RT   "Nucleotide sequence and tissue-specific expression of the rat
RT   melanin concentrating hormone gene.";
RL   DNA Cell Biol. 9:637-645(1990).
RN   [3]
RP   SEQUENCE OF 147-165.
RC   TISSUE=Hypothalamus;
RX   MEDLINE=89338286; PubMed=2759038;
RA   Vaughan J.M., Fischer W.H., Hoeger C., Rivier J., Vale W.;
RT   "Characterization of melanin-concentrating hormone from rat
RT   hypothalamus.";
RL   Endocrinology 125:1660-1665(1989).
RN   [4]
RP   TISSUE SPECIFICITY.
RC   STRAIN=Sprague-Dawley, and Wistar;
RX   MEDLINE=95303246; PubMed=7783849;
RA   Hervieu G., Nahon J.-L.;
RT   "Pro-melanin-concentrating hormone messenger ribonucleic acid and
RT   peptides expression in peripheral tissues of the rat.";
RL   Neuroendocrinology 61:348-364(1995).
RN   [5]
RP   TISSUE SPECIFICITY.
RX   MEDLINE=96146469; PubMed=8593803;
RA   Hervieu G., Volant K., Grishina O., Descroix-Vagne M., Nahon J.-L.;
RT   "Similarities in cellular expression and functions of melanin-
RT   concentrating hormone and atrial natriuretic factor in the rat
RT   digestive tract.";
RL   Endocrinology 137:561-571(1996).
RN   [6]
RP   TISSUE SPECIFICITY.
RX   MEDLINE=95342335; PubMed=7617126;
RA   Takahashi K., Suzuki H., Totsune K., Murakami O., Satoh F., Sone M.,
RA   Sasano H., Mouri T., Shibahara S.;
RT   "Melanin-concentrating hormone in human and rat.";
RL   Neuroendocrinology 161:493-498(1995).
RN   [7]
RP   PROCESSING, AND AMIDATION OF NEI.
RX   MEDLINE=93010665; PubMed=1327720;
RA   Parkes D., Vale W.;
RT   "Secretion of melanin-concentrating hormone and neuropeptide-EI from
RT   cultured rat hypothalamic cells.";
RL   Endocrinology 131:1826-1831(1992).
RN   [8]
RP   PROCESSING.
RX   MEDLINE=99156937; PubMed=10037747;
RA   Viale A., Ortola C., Hervieu G., Furuta M., Barbero P., Steiner D.F.,
RA   Seidah N.G., Nahon J.-L.;
RT   "Cellular localization and role of prohormone convertases in the
RT   processing of pro-melanin concentrating hormone in mammals.";
RL   J. Biol. Chem. 274:6536-6545(1999).
RN   [9]
RP   FUNCTION OF NEI.
RX   MEDLINE=95375766; PubMed=7647772;
RA   Bluet-Pajot M.T., Presse F., Voko Z., Hoeger C., Mounier F.,
RA   Epelbaum J., Nahon J.-L.;
RT   "Neuropeptide-E-I antagonizes the action of melanin-concentrating
RT   hormone on stress-induced release of adrenocorticotropin in the rat.";
RL   J. Neuroendocrinol. 7:297-303(1995).
RN   [10]
RP   FUNCTION OF NEI.
RX   MEDLINE=98366105; PubMed=9700748;
RA   Gonzalez M.I., Baker B.I., Hole D.R., Wilson C.A.;
RT   "Behavioral effects of neuropeptide E-I (NEI) in the female rat:
RT   interactions with alpha-MSH, MCH and dopamine.";
RL   Peptides 19:1007-1016(1998).
RN   [11]
RP   FUNCTION OF MCH AND NEI.
RX   MEDLINE=99025517; PubMed=9809645;
RA   Kistler-Heer V., Schlumpf M., Lichtensteiger W.;
RT   "Melanocortin and MCH precursor-derived NEI effects on striatum-
RT   midbrain co-cultures.";
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RL   Peptides 19:1317-1327(1998).
CC   -!- FUNCTION: MCH inhibits acth secretion at the end of the light on
CC       period which corresponds to the peak of the circadian rhythm in
CC       ACTH. Inhibits also stress induced ACTH release during the light
CC       off period of the cycle. Involved as a neurotransmitter or
CC       neuromodulator in a broad array of neuronal functions. Stimulates
CC       sexual behavior when injected into the ventromedial nucleus, this
CC       effect is antagonized by NEI. In the medial preoptic area,
CC       stimulates anxiety and sexual behavior. Antagonizes inhibitory
CC       effect of melanotropin alpha on exploration behavior.
CC   -!- FUNCTION: NEI CAN INFLUENCE DIFFERENTIATION OF NEURONAL PROCESSES
CC       IN BRAIN NEURONS. AFFECTS THE CONTENT OF NEUROFILAMENT PROTEIN IN
CC       NEURITOGENESIS (IN VITRO). MAY ALSO BE A NEUROMODULATORY FACTOR.
CC       IN BEHAVIORAL TESTS, IT STIMULATES EXPLORATION AND ANXIETY WHEN
CC       INJECTED INTO THE VENTROMEDIAL NUCLEUS. ALSO STIMULATES GROOMING,
CC       LOCOMOTION AND REARING. MAY ANTAGONIZE THE INHIBITORY EFFECT OF
CC       MCH ON ACTH RELEASE. REDUCES DOPAMINE AND DOPAC RELEASE IN THE
CC       VENTROMEDIAL NUCLEUS.
CC   -!- TISSUE SPECIFICITY: MCH IS PRESENT IN ALL REGIONS OF THE BRAIN AND
CC       IN NEUROINTERMEDIATE LOBE OF THE PITUARITY GLAND, WITH HIGHEST
CC       CONCENTRATIONS IN THE HYPOTHALAMUS. ALSO EXPRESSED TO A MUCH
CC       LESSER EXTENT IN STOMACH, LAMINA PROPRIA OF BOTH DUODENUM AND
CC       COLON, OVARY, THYMUS, PANCREAS, ADRENAL GLAND AND TESTIS
CC       (SPERMATOGONIA, EARLY SPERMATOCYTES AND SERTOLI CELLS). WEAK
CC       EXPRESSION IN HEART AND LUNG. THE OTHER PEPTIDES ARE EXPRESSED AT
CC       LEAST IN SERTOLI CELLS, NEI BEING ALSO EXPRESSED IN BRAIN, STOMACH
CC       AND PROXIMAL DUODENUM. IN BRAIN EXCLUSIVELY MATURE MCH AND NEI
CC       PEPTIDES ARE PRESENT. IN PERIPHERAL TISSUES A LARGE PRODUCT,
CC       ENCOMPASSING THE NEI AND MCH DOMAINS OF THE PRECURSOR, IS FOUND
CC       PREDOMINANTLY. AT LOW LEVELS FULLY PROCESSED MCH AND NEI PEPTIDES
CC       ARE PRESENT IN GUT. NO EXPRESSION IN PERIPHERAL BLOOD.
CC   -!- DEVELOPMENTAL STAGE: EXPRESSION IS STRONGLY INCREASED IN
CC       HYPOTHALAMUS BETWEEN POSTNATAL DAYS 12 AND 20, TO REACH HIGH
CC       CONSTANT VALUES IN ADULT.
CC   -!- INDUCTION: INHIBITED BY NEUROGENIC STRESS OR OSMOTIC STRESS.
CC   -!- PTM: PRO-MCH IS PROCESSED DIFFERENTIALLY IN THE BRAIN AND IN
CC       PERIPHERAL ORGANS PRODUCING TWO NEUROPEPTIDES; NEI AND MCH. A
CC       THIRD PEPTIDE, NGE, MAY ALSO BE PRODUCED. PREFERENTIAL PROCESSING
CC       IN NEURONS BY PROHORMONE CONVERTASE 2 (PC2) GENERATES NEI. MCH IS
CC       GENERATED IN NEURONS OF THE LATERAL HYPOTHALMIC AREA BY SEVERAL
CC       PROHORMONE CONVERTASES INCLUDING PC1/3, PC2 AND PC5/6.
CC   -!- PTM: MCH is a cyclic petide.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; M29712; AAA41580.1; -.
DR   EMBL; M62641; AAA41581.1; -.
DR   PIR; A36237; A36237.
DR   PIR; A37407; A37407.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Amidation.
FT   SIGNAL       1     21       POTENTIAL.
FT   CHAIN       22    165       PRO-MCH.
FT   PEPTIDE    110    128       NGE (POTENTIAL).
FT   PEPTIDE    131    143       NEI.
FT   PEPTIDE    147    165       MELANIN-CONCENTRATING HORMONE.
FT   MOD_RES    143    143       AMIDATION (G-144 PROVIDE AMIDE GROUP).
FT   DISULFID   153    162       BY SIMILARITY.
SQ   SEQUENCE   165 AA;  18482 MW;  38E9F07693E77A05 CRC64;

  Query Match           100.0%;  Score 113;  DB 1;  Length 165;
  Best Local Similarity  100.0%;  Pred. No. 4.3e-11;
  Matches   19;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 DFDMLRCMLGRVYRPCWQV 19
              ||||||||||||||||||| 
Db        147 DFDMLRCMLGRVYRPCWQV 165


RESULT 3
MLCH_MOUSE
ID   MLCH_MOUSE     STANDARD;      PRT;   166 AA.
AC   P56942;
DT   30-MAY-2000 (Rel. 39, Created)
DT   30-MAY-2000 (Rel. 39, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Pro-MCH precursor [Contains: Neuropeptide-glycine-glutamic acid (NGE)
DE   (Neuropeptide G-E); Neuropeptide-glutamic acid-isoleucine (NEI)
DE   (Neuropeptide E-I); Melanin-concentrating hormone (MCH)].
GN   PMCH OR MCH.
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=BALB/c; TISSUE=Brain;
RA   Breton C., Presse F., Hervieu G., Nahon J.-L.;
RT   "Structure and regulation of the mouse melanin-concentrating hormone
RT   mRNA and gene.";
RL   Mol. Cell. Neurosci. 4:271-284(1993).
RN   [2]
RP   PROCESSING.
RX   MEDLINE=99156937; PubMed=10037747;
RA   Viale A., Ortola C., Hervieu G., Furuta M., Barbero P., Steiner D.F.,
RA   Seidah N.G., Nahon J.-L.;
RT   "Cellular localization and role of prohormone convertases in the
RT   processing of pro-melanin concentrating hormone in mammals.";
RL   J. Biol. Chem. 274:6536-6545(1999).
RN   [3]
RP   TISSUE SPECIFICITY.
RX   MEDLINE=96344052; PubMed=8724342;
RA   Hervieu G., Segretain D., Nahon J.-L.;
RT   "Developmental and stage-dependent expression of melanin-concentrating
RT   hormone in mammalian germ cells.";
RL   Biol. Reprod. 54:1161-1172(1996).
CC   -!- FUNCTION: MCH may act as a neurotransmitter or neuromodulator in a
CC       broad array of neuronal functions directed toward the regulation
CC       of goal-directed behavior, such as food intake, and general
CC       arousal (By similarity).
CC   -!- TISSUE SPECIFICITY: PREDOMINANTLY EXPRESSED IN HYPOTHALAMUS. ALSO
CC       FOUND IN HEART, INTESTINE, SPLEEN AND TESTIS (SPERMATOGONIA, EARLY
CC       SPERMATOCYTES AND SERTOLI CELLS). IN BRAIN ONLY MATURE MCH
CC       AND NEI PEPTIDES ARE PRESENT. IN PERIPHERAL TISSUES A LARGE
CC       PRODUCT, ENCOMPASSING THE NEI AND MCH DOMAINS OF THE PRECURSOR, IS
CC       FOUND PREDOMINANTLY.
CC   -!- DEVELOPMENTAL STAGE: EXPRESSION IS ENHANCED BETWEEN POSTNATAL DAYS
CC       10 AND 15.
CC   -!- PTM: PRO-MCH IS PROCESSED DIFFERENTIALLY IN THE BRAIN AND IN
CC       PERIPHERAL ORGANS PRODUCING TWO NEUROPEPTIDES; NEI AND MCH. A
CC       THIRD PEPTIDE, NGE, MAY ALSO BE PRODUCED. PREFERENTIAL PROCESSING
CC       IN NEURONS BY PROHORMONE CONVERTASE 2 (PC2) GENERATES NEI. MCH IS
CC       GENERATED IN NEURONS OF THE LATERAL HYPOTHALMIC AREA BY SEVERAL
CC       PROHORMONE CONVERTASES INCLUDING PC1/3, PC2 AND PC5/6.
CC   -!- PTM: MCH is a cyclic petide.
CC   -!- SIMILARITY: BELONGS TO THE MCH FAMILY.
DR   MGD; MGI:97629; Pmch.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Amidation.
FT   SIGNAL       1     21       POTENTIAL.
FT   CHAIN       22    166       PRO-MCH.
FT   PEPTIDE    110    129       NGE (POTENTIAL).
FT   PEPTIDE    132    144       NEI (BY SIMILARITY).
FT   PEPTIDE    148    166       MELANIN-CONCENTRATING HORMONE.
FT   MOD_RES    144    144       AMIDATION (G-145 PROVIDE AMIDE GROUP)
FT                               (BY SIMILARITY).
FT   DISULFID   154    163       BY SIMILARITY.
SQ   SEQUENCE   166 AA;  18645 MW;  13D102686660CA0D CRC64;
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  Query Match           100.0%;  Score 113;  DB 1;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 4.4e-11;
  Matches   19;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 DFDMLRCMLGRVYRPCWQV 19
              |||||||||||||||||||
Db        148 DFDMLRCMLGRVYRPCWQV 166


RESULT 4
MLC2_HUMAN
ID   MLC2_HUMAN     STANDARD;      PRT;    78 AA.
AC   Q16048;
DT   15-JUL-1999 (Rel. 38, Created)
DT   15-JUL-1999 (Rel. 38, Last sequence update)
DT   15-JUN-2002 (Rel. 41, Last annotation update)
DE   Pro-MCH variant (Fragment).
GN   PMCHL1.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Brain;
RX   MEDLINE=93316802; PubMed=8326825;
RA   Breton C., Schorpp M., Nahon J.-L.;
RT   "Isolation and characterization of the human melanin-concentrating
RT   hormone gene and a variant gene.";
RL   Brain Res. Mol. Brain Res. 18:297-310(1993).
RN   [2]
RP   EXPRESSION.
RX   MEDLINE=98398385; PubMed=9729295;
RA   Miller C.L., Burmeister M., Thompson R.C.;
RT   "Antisense expression of the human pro-melanin-concentrating hormone
RT   genes.";
RL   Brain Res. 803:86-94(1998).
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
CC   -!- CAUTION: PMCHL1 MRNA MAY NOT BE USED AS TEMPLATE FOR TRANSLATION.
CC       ACCORDING TO REF.2 ONLY ANTISENSE PMCHL1 TRANSCRIPTS ARE PRESENT
CC       IN BRAIN.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; S64288; AAB27494.1; -.
DR   Genew; HGNC:9110; PMCHL1.
DR   MIM; 176793; -.
FT   NON_TER       1      1
FT   DOMAIN       23     41       NGE-LIKE.
FT   DOMAIN       44     56       NEI-LIKE.
FT   DOMAIN       60     78       MELANIN-CONCENTRATING HORMONE-LIKE.
SQ   SEQUENCE   78 AA;  8774 MW;  52826A253D241355 CRC64;

  Query Match           78.8%;  Score 89;  DB 1;  Length 78;
  Best Local Similarity  78.9%;  Pred. No. 1.5e-07;
  Matches   15;  Conservative    1;  Mismatches    3;  Indels    0;  Gaps    0;

Qy          1 DFDMLRCMLGRVYRPCWQV 19
              ||| | |||||||: ||||
Db         60 DFDTLSCMLGRVYQSCWQV 78


RESULT 5
MLC1_ONCKE
ID   MLC1_ONCKE     STANDARD;      PRT;    132 AA.
AC   P19713; P01208;
DT   01-FEB-1991 (Rel. 17, Created)
DT   01-FEB-1991 (Rel. 17, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Pro-MCH 1 precursor [Contains: Neuropeptide-glutamic acid-valine (NEV)
DE   (Neuropeptide E-V); Melanin-concentrating hormone (MCH)].
GN   MCH1.
OS   Oncorhynchus keta (Chum salmon).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC   Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OX   NCBI_TaxID=8018;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=90006787; PubMed=2792771;
RA   Takayama Y., Wada C., Kawauchi H., Ono M.;
RT   "Structures of two genes coding for melanin-concentrating hormone of
RT   chum salmon.";
RL   Gene 80:65-73(1989).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=89138019; PubMed=2465207;
RA   Ono M., Wada C., Oikawa I., Kawazoe I., Kawauchi H.;
RT   "Structures of two kinds of mRNA encoding the chum salmon melanin-
RT   concentrating hormone.";
RL   Gene 71:433-438(1988).
RN   [3]
RP   SEQUENCE OF 116-132.
RX   MEDLINE=84014069; PubMed=6621686;
RA   Kawauchi H., Kawazoe I., Tsubokawa M., Kishida M., Baker B.I.;
RT   "Characterization of melanin-concentrating hormone in chum salmon
RT   pituitaries.";
RL   Nature 305:321-323(1983).
CC   -!- FUNCTION: PLAYS A ROLE IN SKIN PIGMENTATION BY ANTAGONIZING THE
CC       ACTION OF MELANOTROPIN ALPHA. INDUCES MELANIN CONCENTRATION WITHIN
CC       THE MELANOPHORES. MAY PARTICIPATE IN THE CONTROL OF THE
CC       HYPOTHALAMO-PITUITARY ADRENAL GLAND AXIS BY INHIBITING THE RELEASE
CC       OF ACTH.
CC   -!- TISSUE SPECIFICITY: PITUITARY GLAND. PRODUCED IN NEURONS OF
CC       LATERAL BASAL HYPOTHALAMUS WHICH PROJECT BOTH TO THE BRAIN AND TO
CC       THE NEURAL LOBE OF THE PITUITARY GLAND FROM WHERE MCH IS RELEASED.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; M27872; AAA49418.1; -.
DR   EMBL; M23573; AAA49420.1; -.
DR   PIR; JS0282; MTONIK.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Multigene family.
FT   SIGNAL        1     24
FT   CHAIN        25    132       PRO-MCH 1.
FT   PEPTIDE     101    113       NEV (POTENTIAL).
FT   PEPTIDE     116    132       MELANIN-CONCENTRATING HORMONE.
FT   DISULFID    120    129
FT   CONFLICT      4      4       Y -> S (IN REF. 2).
SQ   SEQUENCE   132 AA;  14682 MW;  CE9CF95292498738 CRC64;

  Query Match           77.0%;  Score 87;  DB 1;  Length 132;
  Best Local Similarity  76.5%;  Pred. No. 4.9e-07;
  Matches   13;  Conservative    3;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          3 DMLRCMLGRVYRPCWQV 19
              | :|||:||||||||:|
Db        116 DTMRCMVGRVYRPCWEV 132


RESULT 6
MLC1_ONCKI
```

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ID   MLC1_ONCKI     STANDARD;      PRT;   132 AA.
AC   P56943;
DT   30-MAY-2000 (Rel. 39, Created)
DT   30-MAY-2000 (Rel. 39, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Pro-MCH 1 precursor [Contains: Neuropeptide-glutamic acid-valine (NEV)
DE   (Neuropeptide E-V); Melanin-concentrating hormone (MCH)].
GN   MCH1.
OS   Oncorhynchus kisutch (Coho salmon).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC   Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OX   NCBI_TaxID=8019;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Nahon J.-L., Presse F., Schoepfer R., Vale W.;
RT   "Identificatiomn of a single melanin-concentrating hormone messenger
RT   ribonucleic acid in Coho salmon: structural relatedness with
RT   riobonucleic acid.";
RL   J. Neuroendocrinol. 3:173-183(1991).
CC   -!- FUNCTION: PLAYS A ROLE IN SKIN PIGMENTATION BY ANTAGONIZING THE
CC       ACTION OF MELANOTROPIN ALPHA. INDUCES MELANIN CONCENTRATION WITHIN
CC       THE MELANOPHORES. MAY PARTICIPATE IN THE CONTROL OF THE
CC       HYPOTHALAMO-PITUITARY ADRENAL GLAND AXIS BY INHIBITING THE RELEASE
CC       OF ACTH.
CC   -!- TISSUE SPECIFICITY: PITUITARY GLAND. PRODUCED IN NEURONS OF
CC       LATERAL BASAL HYPOTHALAMUS WHICH PROJECT BOTH TO THE BRAIN AND TO
CC       THE NEURAL LOBE OF THE PITUITARY GLAND FROM WHERE MCH IS RELEASED.
CC   -!- SIMILARITY: BELONGS TO THE MCH FAMILY.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Multigene family.
FT   SIGNAL        1     24       POTENTIAL.
FT   CHAIN         25    132      PRO-MCH 1.
FT   PEPTIDE      101    113      NEV (POTENTIAL).
FT   PEPTIDE      116    132      MELANIN-CONCENTRATING HORMONE.
FT   DISULFID     120    129      BY SIMILARITY.
FT   DOMAIN        86     89      POLY-ALA.
SQ   SEQUENCE   132 AA;  14668 MW;  8B9348336EBB1AA8 CRC64;

  Query Match             77.0%;  Score 87;  DB 1;  Length 132;
  Best Local Similarity   76.5%;  Pred. No. 4.9e-07;
  Matches   13;  Conservative    3;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          3 DMLRCMLGRVYRPCWQV 19
              | :|||:|||||||||:|
Db        116 DTMRCMVGRVYRPCWEV 132


RESULT 7
MLC1_ONCMY
ID   MLC1_ONCMY     STANDARD;      PRT;   132 AA.
AC   P33745;
DT   01-FEB-1994 (Rel. 28, Created)
DT   01-FEB-1994 (Rel. 28, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Pro-MCH 1 precursor [Contains: Neuropeptide-glutamic acid-valine (NEV)
DE   (Neuropeptide E-V); Melanin-concentrating hormone (MCH)].
GN   MCH1.
OS   Oncorhynchus mykiss (Rainbow trout) (Salmo gairdneri).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC   Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OX   NCBI_TaxID=8022;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=95249052; PubMed=7731499;
RA   Baker B., Levy A., Hall L., Lightman S.;
RT   "Cloning and expression of melanin-concentrating hormone genes in the
RT   rainbow trout brain.";
RL   Neuroendocrinology 61:67-76(1995).
CC   -!- FUNCTION: PLAYS A ROLE IN SKIN PIGMENTATION BY ANTAGONIZING THE
CC       ACTION OF MELANOTROPIN ALPHA. INDUCES MELANIN CONCENTRATION WITHIN
CC       THE MELANOPHORES. MAY PARTICIPATE IN THE CONTROL OF THE
CC       HYPOTHALAMO-PITUITARY ADRENAL GLAND AXIS BY INHIBITING THE RELEASE
CC       OF ACTH.
CC   -!- TISSUE SPECIFICITY: PITUITARY GLAND. PRODUCED IN NEURONS OF
CC       LATERAL BASAL HYPOTHALAMUS WHICH PROJECT BOTH TO THE BRAIN AND TO
CC       THE NEURAL LOBE OF THE PITUITARY GLAND FROM WHERE MCH IS RELEASED.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; X73837; CAA52059.1; -.
DR   PIR; S34653; S34653.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Multigene family.
FT   SIGNAL        1     24       BY SIMILARITY.
FT   CHAIN         25    132      PRO-MCH 1.
FT   PEPTIDE      101    113      NEV (POTENTIAL).
FT   PEPTIDE      116    132      MELANIN-CONCENTRATING HORMONE.
FT   DISULFID     120    129      BY SIMILARITY.
SQ   SEQUENCE   132 AA;  14608 MW;  A0FB644E14C6FD99 CRC64;

  Query Match             77.0%;  Score 87;  DB 1;  Length 132;
  Best Local Similarity   76.5%;  Pred. No. 4.9e-07;
  Matches   13;  Conservative    3;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          3 DMLRCMLGRVYRPCWQV 19
              | :|||:|||||||||:|
Db        116 DTMRCMVGRVYRPCWEV 132


RESULT 8
MLC1_ONCTS
ID   MLC1_ONCTS     STANDARD;      PRT;   132 AA.
AC   P17640;
DT   01-AUG-1990 (Rel. 15, Created)
DT   01-AUG-1990 (Rel. 15, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Pro-MCH 1 precursor [Contains: Neuropeptide-glutamic acid-valine (NEV)
DE   (Neuropeptide E-V); Melanin-concentrating hormone (MCH)].
GN   MCH1.
OS   Oncorhynchus tschawytscha (Chinook salmon) (King salmon).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC   Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OX   NCBI_TaxID=74940;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=89264605; PubMed=2471200;
RA   Minth C.A., Qiu H., Akil H., Watson S.J., Dixon J.E.;
RT   "Two precursors of melanin-concentrating hormone: DNA sequence
RT   analysis and in situ immunochemical localization.";
RL   Proc. Natl. Acad. Sci. U.S.A. 86:4292-4296(1989).
CC   -!- FUNCTION: PLAYS A ROLE IN SKIN PIGMENTATION BY ANTAGONIZING THE
CC       ACTION OF MELANOTROPIN ALPHA. INDUCES MELANIN CONCENTRATION WITHIN
CC       THE MELANOPHORES. MAY PARTICIPATE IN THE CONTROL OF THE
CC       HYPOTHALAMO-PITUITARY ADRENAL GLAND AXIS BY INHIBITING THE RELEASE
CC       OF ACTH.
CC   -!- TISSUE SPECIFICITY: PITUITARY GLAND. PRODUCED IN NEURONS OF
CC       LATERAL BASAL HYPOTHALAMUS WHICH PROJECT BOTH TO THE BRAIN AND TO
CC       THE NEURAL LOBE OF THE PITUITARY GLAND FROM WHERE MCH IS RELEASED.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
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CC   ---------------------------------------------------------------------
DR   EMBL; M25755; AAA49423.1; -.
DR   PIR; B32910; B32910.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Multigene family.
FT   SIGNAL        1     24
FT   CHAIN        25    132       PRO-MCH 1.
FT   PEPTIDE     101    113       NEV (POTENTIAL).
FT   PEPTIDE     116    132       MELANIN-CONCENTRATING HORMONE.
FT   DISULFID    120    129
SQ   SEQUENCE   132 AA;  14657 MW;  F2065B83AFAB46E5 CRC64;

  Query Match             77.0%;  Score 87;  DB 1;  Length 132;
  Best Local Similarity   76.5%;  Pred. No. 4.9e-07;
  Matches   13;  Conservative    3;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          3 DMLRCMLGRVYRPCWQV 19
              | :|||:|||||||||:|
Db        116 DTMRCMVGRVYRPCWEV 132


RESULT 9
MLC2_ONCKE
ID   MLC2_ONCKE     STANDARD;      PRT;   132 AA.
AC   P19714; P01208;
DT   21-JUL-1986 (Rel. 01, Created)
DT   01-JUL-1989 (Rel. 11, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Pro-MCH 2 precursor [Contains: Neuropeptide-glutamic acid-valine (NEV)
DE   (Neuropeptide E-V); Melanin-concentrating hormone (MCH)].
GN   MCH2.
OS   Oncorhynchus keta (Chum salmon),
OS   Oncorhynchus tschawytscha (Chinook salmon) (King salmon), and
OS   Oncorhynchus mykiss (Rainbow trout) (Salmo gairdneri).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei;
OC   Protacanthopterygii; Salmoniformes; Salmonidae; Oncorhynchus.
OX   NCBI_TaxID=8018, 74940, 8022;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   SPECIES=O.keta; TISSUE=Brain;
RX   MEDLINE=89263809; PubMed=2471156;
RA   Nahon J.-L., Schoepfer R., Vale W.;
RT   "cDNA sequence of salmon melanin-concentrating hormone exhibits
RT   similarities with 7SL RNA.";
RL   Nucleic Acids Res. 17:3598-3598(1989).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   SPECIES=O.keta;
RX   MEDLINE=90006787; PubMed=2792771;
RA   Takayama Y., Wada C., Kawauchi H., Ono M.;
RT   "Structures of two genes coding for melanin-concentrating hormone of
RT   chum salmon.";
RL   Gene 80:65-73(1989).
RN   [3]
RP   SEQUENCE FROM N.A.
RC   SPECIES=O.keta;
RX   MEDLINE=89138019; PubMed=2465207;
RA   Ono M., Wada C., Oikawa I., Kawazoe I., Kawauchi H.;
RT   "Structures of two kinds of mRNA encoding the chum salmon melanin-
RT   concentrating hormone.";
RL   Gene 71:433-438(1988).
RN   [4]
RP   SEQUENCE FROM N.A.
RC   SPECIES=O.tschawytscha;
RX   MEDLINE=89264605; PubMed=2471200;
RA   Minth C.A., Qiu H., Akil H., Watson S.J., Dixon J.E.;
RT   "Two precursors of melanin-concentrating hormone: DNA sequence
RT   analysis and in situ immunochemical localization.";
RL   Proc. Natl. Acad. Sci. U.S.A. 86:4292-4296(1989).
RN   [5]
RP   SEQUENCE FROM N.A.
RC   SPECIES=O.mykiss;
RX   MEDLINE=95249052; PubMed=7731499;
RA   Baker B., Levy A., Hall L., Lightman S.;
RT   "Cloning and expression of melanin-concentrating hormone genes in the
RT   rainbow trout brain.";
RL   Neuroendocrinology 61:67-76(1995).
RN   [6]
RP   SEQUENCE OF 116-132.
RC   SPECIES=O.keta;
RX   MEDLINE=84014069; PubMed=6621686;
RA   Kawauchi H., Kawazoe I., Tsubokawa M., Kishida M., Baker B.I.;
RT   "Characterization of melanin-concentrating hormone in chum salmon
RT   pituitaries.";
RL   Nature 305:321-323(1983).
CC   -!- FUNCTION: PLAYS A ROLE IN SKIN PIGMENTATION BY ANTAGONIZING THE
CC       ACTION OF MELANOTROPIN ALPHA. INDUCES MELANIN CONCENTRATION WITHIN
CC       THE MELANOPHORES. MAY PARTICIPATE IN THE CONTROL OF THE
CC       HYPOTHALAMO-PITUITARY ADRENAL GLAND AXIS.BY INHIBITING THE RELEASE
CC       OF ACTH.
CC   -!- TISSUE SPECIFICITY: PITUITARY GLAND. PRODUCED IN NEURONS OF
CC       LATERAL BASAL HYPOTHALAMUS WHICH PROJECT BOTH TO THE BRAIN AND TO
CC       THE NEURAL LOBE OF THE PITUITARY GLAND FROM WHERE MCH IS RELEASED.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
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CC   ---------------------------------------------------------------------
DR   EMBL; X13685; CAA31978.1; -.
DR   EMBL; M23574; AAA49421.1; -.
DR   EMBL; M27871; AAA49419.1; -.
DR   EMBL; M25754; AAA49422.1; -.
DR   EMBL; X73838; CAA52060.1; -.
DR   PIR; JS0283; MTON2K.
DR   PIR; A32910; A32910.
DR   PIR; S04087; S04087.
DR   PIR; S34654; S34654.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal;
KW   Multigene family.
FT   SIGNAL        1     24
FT   CHAIN        25    132       PRO-MCH 2.
FT   PEPTIDE     101    113       NEV (POTENTIAL).
FT   PEPTIDE     116    132       MELANIN-CONCENTRATING HORMONE.
FT   DISULFID    120    129
FT   CONFLICT    107    108       SP -> NS (IN REF. 2).
FT   CONFLICT    107    107       S -> N (IN REF. 3).
SQ   SEQUENCE   132 AA;  14710 MW;  AAE55F456EA26FE4 CRC64;

  Query Match             77.0%;  Score 87;  DB 1;  Length 132;
  Best Local Similarity   76.5%;  Pred. No. 4.9e-07;
  Matches   13;  Conservative    3;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          3 DMLRCMLGRVYRPCWQV 19
              | :|||:|||||||||:|
Db        116 DTMRCMVGRVYRPCWEV 132


RESULT 10
MLCH_OREMO
ID   MLCH_OREMO     STANDARD;      PRT;   136 AA.
AC   P49794;
DT   01-OCT-1996 (Rel. 34, Created)
DT   01-OCT-1996 (Rel. 34, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Pro-MCH precursor [Contains: Melanin-concentrating hormone (MCH)].
OS   Oreochromis mossambicus (Mozambique tilapia) (Tilapia mossambica).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC   Acanthomorpha; Acanthopterygii; Percomorpha; Perciformes; Labroidei;
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OC   Cichlidae; Oreochromis.
OX   NCBI_TaxID=8127;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Hypothalamus;
RA   Groneveld D., Hut M.J., Balm P.H.M., Martens G.J.M.,
RA   Wendelaar Bonga S.E.;
RT   "Cloning and sequence analysis of hypothalamus cDNA encoding tilapia
RT   melanin-concentrating hormone.";
RL   Fish Physiol. Biochem. 11:117-124(1993).
CC   -!- FUNCTION: PLAYS A ROLE IN SKIN PIGMENTATION BY ANTAGONIZING THE
CC       ACTION OF MELANOTROPIN ALPHA. INDUCES MELANIN CONCENTRATION WITHIN
CC       THE MELANOPHORES. MAY PARTICIPATE IN THE CONTROL OF THE
CC       HYPOTHALAMO-PITUITARY ADRENAL GLAND AXIS BY INHIBITING THE RELEASE
CC       OF ACTH.
CC   -!- SIMILARITY: BELONGS TO THE MELANIN-CONCENTRATING HORMONE FAMILY.
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CC   ---------------------------------------------------------------------
DR   EMBL; X81144; CAA57050.1; -.
KW   Cleavage on pair of basic residues; Hormone; Neuropeptide; Signal.
FT   SIGNAL       1     20       POTENTIAL.
FT   CHAIN       21    136       PRO-MCH.
FT   PEPTIDE     119    136       MELANIN-CONCENTRATING HORMONE.
FT   DISULFID    124    133       BY SIMILARITY.
SQ   SEQUENCE   136 AA;  15410 MW;  91EA3AE3B91500DD CRC64;

  Query Match             77.0%;  Score 87;  DB 1;  Length 136;
  Best Local Similarity   76.5%;  Pred. No. 5e-07;
  Matches   13;  Conservative    3;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          3 DMLRCMLGRVYRPCWQV 19
              | :|||:|||||||:|
Db        120 DTMRCMVGRVYRPCWEV 136


RESULT 11
ISTA_SHISO
ID   ISTA_SHISO     STANDARD;      PRT;   315 AA.
AC   P16944;
DT   01-AUG-1990 (Rel. 15, Created)
DT   01-AUG-1990 (Rel. 15, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Transposase for insertion sequence element IS640.
GN   ISTA.
OS   Shigella sonnei.
OC   Bacteria; Proteobacteria; gamma subdivision; Enterobacteriaceae;
OC   Shigella.
OX   NCBI_TaxID=624;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=88062685; PubMed=2824781;
RA   Matsutani S., Ohtsubo H., Maeda Y., Ohtsubo E.;
RT   "Isolation and characterization of IS elements repeated in the
RT   bacterial chromosome.";
RL   J. Mol. Biol. 196:445-455(1987).
CC   -!- FUNCTION: INVOLVED IN THE TRANSPOSITION OF THE INSERTION
CC       SEQUENCE.
CC   -!- SIMILARITY: BELONGS TO THE IS21/IS408/IS1162 FAMILY OF
CC       TRANSPOSASES.
CC   ---------------------------------------------------------------------
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CC   use by non-profit institutions as long as its content is in no way
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CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; X05956; CAA29390.1; -.
DR   PIR; S03416; S03416.
DR   InterPro; IPR001584; Rve.
DR   Pfam; PF00665; rve; 1.
KW   Transposable element; Transposition; DNA-binding; DNA recombination.
SQ   SEQUENCE   315 AA;  37544 MW;  DB92FEC6777D1D42 CRC64;

  Query Match             38.5%;  Score 43.5;  DB 1;  Length 315;
  Best Local Similarity   42.1%;  Pred. No. 8.9;
  Matches    8;  Conservative    5;  Mismatches    3;  Indels    3;  Gaps    1;

Qy          2 FDMLR---CMLGRVYRPCW 17
              : :||   |:||::||  |
Db        297 YQLLRYPPCVLGQLYRGWW 315


RESULT 12
S6AA_HUMAN
ID   S6AA_HUMAN     STANDARD;      PRT;   426 AA.
AC   P53796;
DT   01-OCT-1996 (Rel. 34, Created)
DT   01-OCT-1996 (Rel. 34, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Sodium- and chloride-dependent creatine transporter 2 (CT2)
DE   (Fragment).
GN   SLC6A10.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=96299673; PubMed=8661037;
RA   Iyer G.S., Krahe R., Goodwin L.A., Doggett N.A., Siciliano M.J.,
RA   Funanage V.L., Proujansky R.;
RT   "Identification of a testis-expressed creatine transporter gene at
RT   16p11.2 and confirmation of the X-linked locus to Xq28.";
RL   Genomics 34:143-146(1996).
CC   -!- FUNCTION: REQUIRED FOR THE UPTAKE OF CREATINE. MAY BE CRITICAL FOR
CC       CREATINE TRANSPORT INTO SPERMATOZOA AND SPERM MOTILITY FOR THE
CC       SPERM LACKING AN X CHROMOSOME AFTER MEIOSIS.
CC   -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC   -!- TISSUE SPECIFICITY: TESTIS.
CC   -!- SIMILARITY: BELONGS TO THE SODIUM:NEUROTRANSMITTER SYMPORTER
CC       FAMILY (SNF).
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; U41163; AAA96028.1; -.
DR   GeneW; HGNC:11043; SLC6A10.
DR   MIM; 601294; -.
DR   InterPro; IPR000175; Na/ntran_symport.
DR   Pfam; PF00209; SNF; 1.
DR   ProDom; PD000448; Na/ntran_symport; 1.
DR   PROSITE; PS00610; NA_NEUROTRAN_SYMP_1; PARTIAL.
DR   PROSITE; PS00754; NA_NEUROTRAN_SYMP_2; PARTIAL.
DR   PROSITE; PS50267; NA_NEUROTRAN_SYMP_3; 1.
KW   Neurotransmitter transport; Transport; Transmembrane; Glycoprotein;
KW   Symport.
FT   NON_TER       1      1
FT   TRANSMEM     <1     18       5 (POTENTIAL).
FT   TRANSMEM     54     71       6 (POTENTIAL).
FT   TRANSMEM     83    104       7 (POTENTIAL).
FT   TRANSMEM    137    156       8 (POTENTIAL).
FT   TRANSMEM    186    204       9 (POTENTIAL).
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FT   TRANSMEM    221    241       10 (POTENTIAL).
FT   TRANSMEM    262    281       11 (POTENTIAL).
FT   TRANSMEM    301    319       12 (POTENTIAL).
FT   DOMAIN      320    426       CYTOPLASMIC (POTENTIAL).
SQ   SEQUENCE   426 AA;  47394 MW;  AE6003CC3B077FE3 CRC64;

  Query Match             38.5%;  Score 43.5;  DB 1;  Length 426;
  Best Local Similarity   56.2%;  Pred. No. 12;
  Matches    9;  Conservative    2;  Mismatches    2;  Indels    3;  Gaps    2;

Qy          3 DMLRCMLGRVYRPC-W 17
              | : ||:|  |||| |
Db        246 DDIACMIG--YRPCPW 259


RESULT 13
S6A8_HUMAN
ID   S6A8_HUMAN     STANDARD;      PRT;   635 AA.
AC   P48029;
DT   01-FEB-1996 (Rel. 33, Created)
DT   01-FEB-1996 (Rel. 33, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Sodium- and chloride-dependent creatine transporter 1 (CT1).
GN   SLC6A8.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP.  SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RX   MEDLINE=95041084; PubMed=7953292;
RA   Nash S.R., Giros B., Kingsmore S.F., Rochelle J.M., Suter S.T.,
RA   Gregor P., Seldin M.F., Caron M.G.;
RT.  "Cloning, pharmacological characterization, and genomic localization
RT   of the human creatine transporter.";
RL   Recept. Channels 2:165-174(1994).
RN   [2]
RP   SEQUENCE FROM N.A.
RA   Eichler E.E., Lu F., Shen Y., Muzny D.M., Gibbs R.A., Nelson D.L.;
RT   "Genomic organization of the human creatine transporter and CDM
RT   genes.";
RL   Submitted (SEP-1995) to the EMBL/GenBank/DDBJ databases.
RN   [3]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Brain;
RX   MEDLINE=95032129; PubMed=7945388;
RA   Sora I., Richman J., Santoro G., Wei H., Wang Y., Vanderah T.,
RA   Horvath R., Nguyen M., Waite S., Roeske W.R.;
RT   "The cloning and expression of a human creatine transporter.";
RL   Biochem. Biophys. Res. Commun. 204:419-427(1994).
RN   [4]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=96299791; PubMed=8661155;
RA   Sandoval N., Bauer D., Brenner V., Coy J.F., Drescher B.,
RA   Kioschis P., Korn B., Nyakatura G., Poustka A., Reichwald K.,
RA   Rosenthal A., Platzer M.;
RT   "The genomic organization of a human creatine transporter (CRTR) gene
RT   located in Xq28.";
RL   Genomics 35:383-385(1996).
RN   [5]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Eye;
RA   Strausberg R.;
RL   Submitted (AUG-2001) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: REQUIRED FOR THE UPTAKE OF CREATINE.
CC   -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC   -!- SIMILARITY: BELONGS TO THE SODIUM:NEUROTRANSMITTER SYMPORTER
CC       FAMILY (SNF).
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L31409; AAC41688.1; -.
DR   EMBL; U36341; AAA79507.1; -.
DR   EMBL; S74039; AAB32284.1; -.
DR   EMBL; U52111; AAC51739.1; -.
DR   EMBL; Z66539; CAA91442.1; -.
DR   EMBL; BC012355; AAH12355.1; -.
DR   Genew; HGNC:11055; SLC6A8.
DR   MIM; 300036; -.
DR   InterPro; IPR000175; Na/ntran_symport.
DR   Pfam; PF00209; SNF; 1.
DR   PRINTS; PR00176; NANEUSMPORT.
DR   ProDom; PD000448; Na/ntran_symport; 1.
DR   PROSITE; PS00610; NA_NEUROTRAN_SYMP_1; 1.
DR   PROSITE; PS00754; NA_NEUROTRAN_SYMP_2; 1.
DR   PROSITE; PS50267; NA_NEUROTRAN_SYMP_3; 1.
KW   Neurotransmitter transport; Transport; Transmembrane; Glycoprotein;
KW   Symport.
FT   DOMAIN        1     60       CYTOPLASMIC (POTENTIAL).
FT   TRANSMEM     61     81       1 (POTENTIAL).
FT   TRANSMEM     89    108       2 (POTENTIAL).
FT   TRANSMEM    132    152       3 (POTENTIAL).
FT   DOMAIN      153    232       EXTRACELLULAR (POTENTIAL).
FT   TRANSMEM    233    251       4 (POTENTIAL).
FT   TRANSMEM    260    277       5 (POTENTIAL).
FT   TRANSMEM    313    330       6 (POTENTIAL).
FT   TRANSMEM    342    363       7 (POTENTIAL).
FT   TRANSMEM    396    415       8 (POTENTIAL).
FT   TRANSMEM    445    463       9 (POTENTIAL).
FT   TRANSMEM    480    500       10 (POTENTIAL).
FT   TRANSMEM    521    540       11 (POTENTIAL).
FT   TRANSMEM    560    578       12 (POTENTIAL).
FT   DOMAIN      579    635       CYTOPLASMIC (POTENTIAL).
FT   CARBOHYD    192    192       N-LINKED (GLCNAC. . .) (POTENTIAL).
FT   CARBOHYD    197    197       N-LINKED (GLCNAC. . .) (POTENTIAL).
FT   CONFLICT     24     25       AP -> VS (IN REF. 3).
FT   CONFLICT     32     32       A -> S (IN REF. 3).
FT   CONFLICT     38     38       V -> A (IN REF. 3).
FT   CONFLICT     42     42       T -> A (IN REF. 3).
FT   CONFLICT     44     45       GG -> SS (IN REF. 3).
FT   CONFLICT    193    193       A -> D (IN REF. 3).
FT   CONFLICT    223    223       G -> T (IN REF. 3).
FT   CONFLICT    285    285       A -> P (IN REF. 1).
FT   CONFLICT    368    368       A -> T (IN REF. 3).
SQ   SEQUENCE   635 AA;  70522 MW;  9FAFE100B2A5B845 CRC64;

  Query Match             38.5%;  Score 43.5;  DB 1;  Length 635;
  Best Local Similarity   56.2%;  Pred. No. 17;
  Matches    9;  Conservative    2;  Mismatches    2;  Indels    3;  Gaps    2;

Qy          3 DMLRCMLGRVYRPC-W 17
              | : ||:|  |||| |
Db        505 DDIACMIG--YRPCPW 518


RESULT 14
S6A8_RABIT
ID   S6A8_RABIT     STANDARD;      PRT;   635 AA.
AC   P31661;
DT   01-JUL-1993 (Rel. 26, Created)
DT   01-JUL-1993 (Rel. 26, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Sodium- and chloride-dependent creatine transporter 1 (CT1).
GN   SLC6A8.
OS   Oryctolagus cuniculus (Rabbit).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX   NCBI_TaxID=9986;
RN   [1]
```

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RP   SEQUENCE FROM N.A.
RC   TISSUE=Brain, and Muscle;
RX   MEDLINE=93231984; PubMed=8473283;
RA   Guimbal C., Kilimann M.W.;
RT   "A Na(+)-dependent creatine transporter in rabbit brain, muscle,
RT   heart, and kidney. cDNA cloning and functional expression.";
RL   J. Biol. Chem. 268:8418-8421(1993).
CC   -!- FUNCTION: REQUIRED FOR THE UPTAKE OF CREATINE.
CC   -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC   -!- TISSUE SPECIFICITY: PROMINENT IN KIDNEY, HEART, AND MUSCLE, ALSO
CC       PRESENT IN BRAIN, BUT NOT IN LIVER AND INTESTINE.
CC   -!- SIMILARITY: BELONGS TO THE SODIUM:NEUROTRANSMITTER SYMPORTER
CC       FAMILY (SNF).
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; X67252; CAA47674.1; -.
DR   InterPro; IPR000175; Na/ntran_symport.
DR   Pfam; PF00209; SNF; 1.
DR   PRINTS; PR00176; NANEUSMPORT.
DR   ProDom; PD000448; Na/ntran_symport; 1.
DR   PROSITE; PS00610; NA_NEUROTRAN_SYMP_1; 1.
DR   PROSITE; PS00754; NA_NEUROTRAN_SYMP_2; 1.
DR   PROSITE; PS50267; NA_NEUROTRAN_SYMP_3; 1.
KW   Neurotransmitter transport; Transport; Transmembrane; Glycoprotein;
KW   Symport.
FT   DOMAIN        1     60       CYTOPLASMIC (POTENTIAL).
FT   TRANSMEM     61     81       1 (POTENTIAL).
FT   TRANSMEM     89    108       2 (POTENTIAL).
FT   TRANSMEM    132    152       3 (POTENTIAL).
FT   DOMAIN      153    232       EXTRACELLULAR (POTENTIAL).
FT   TRANSMEM    233    251       4 (POTENTIAL).
FT   TRANSMEM    260    277       5 (POTENTIAL).
FT   TRANSMEM    313    330       6 (POTENTIAL).
FT   TRANSMEM    342    363       7 (POTENTIAL).
FT   TRANSMEM    396    415       8 (POTENTIAL).
FT   TRANSMEM    445    463       9 (POTENTIAL).
FT   TRANSMEM    480    500       10 (POTENTIAL).
FT   TRANSMEM    521    540       11 (POTENTIAL).
FT   TRANSMEM    560    578       12 (POTENTIAL).
FT   DOMAIN      579    635       CYTOPLASMIC (POTENTIAL).
FT   CARBOHYD    192    192       N-LINKED (GLCNAC. . .) (POTENTIAL).
FT   CARBOHYD    197    197       N-LINKED (GLCNAC. . .) (POTENTIAL).
SQ   SEQUENCE   635 AA;  70483 MW;  3ACA6FF073396E43 CRC64;

  Query Match             38.5%;  Score 43.5;  DB 1;  Length 635;
  Best Local Similarity   56.2%;  Pred. No. 17;
  Matches    9;  Conservative    2;  Mismatches    2;  Indels    3;  Gaps    2;

Qy          3 DMLRCMLGRVYRPC-W 17
              | : ||:|  |||| |
Db        505 DDIACMIG--YRPCPW 518


RESULT 15
S6A8_RAT
ID   S6A8_RAT       STANDARD;      PRT;   635 AA.
AC   P28570;
DT   01-DEC-1992 (Rel. 24, Created)
DT   01-DEC-1992 (Rel. 24, Last sequence update)
DT   16-OCT-2001 (Rel. 40, Last annotation update)
DE   Sodium-dependent choline transporter (CHOT1).
GN   SLC6A8.
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=Wistar; TISSUE=Brain;
RX   MEDLINE=92339519; PubMed=1633856;
RA   Mayser W., Schloss P., Betz H.;
RT   "Primary structure and functional expression of a choline transporter
RT   expressed in the rat nervous system.";
RL   FEBS Lett. 305:31-36(1992).
CC   -!- FUNCTION: REGULATES THE SYNTHESIS OF THE NEUROTRANSMITTER
CC       ACETYLCHOLINE IN CHOLINERGIC NERVE TERMINALS BY SODIUM-DRIVEN
CC       HIGH-AFFINITY UPTAKE OF CHOLINE.
CC   -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC   -!- TISSUE SPECIFICITY: IN BRAIN, CEREBELLUM, SPINAL CORD, TO A
CC       LESSER EXTENT, HEART, BUT ONLY VERY LOW EXPRESSION IN LUNG,
CC       KIDNEY, AND MUSCLE.
CC   -!- SIMILARITY: BELONGS TO THE SODIUM:NEUROTRANSMITTER SYMPORTER
CC       FAMILY (SNF).
CC   -!- CAUTION: THIS PROTEIN COULD BE A CREATINE TRANSPORTER, AND NOT A
CC       CHOLINE TRANSPORTER.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; X66494; CAA47119.1; -.
DR   PIR; S23431; S23431.
DR   InterPro; IPR000175; Na/ntran_symport.
DR   Pfam; PF00209; SNF; 1.
DR   PRINTS; PR00176; NANEUSMPORT.
DR   ProDom; PD000448; Na/ntran_symport; 1.
DR   PROSITE; PS00610; NA_NEUROTRAN_SYMP_1; 1.
DR   PROSITE; PS00754; NA_NEUROTRAN_SYMP_2; 1.
DR   PROSITE; PS50267; NA_NEUROTRAN_SYMP_3; 1.
KW   Neurotransmitter transport; Transport; Transmembrane; Glycoprotein;
KW   Symport.
FT   DOMAIN        1     60       CYTOPLASMIC (POTENTIAL).
FT   TRANSMEM     61     81       1 (POTENTIAL).
FT   TRANSMEM     89    108       2 (POTENTIAL).
FT   TRANSMEM    132    152       3 (POTENTIAL).
FT   DOMAIN      153    232       EXTRACELLULAR (POTENTIAL).
FT   TRANSMEM    233    251       4 (POTENTIAL).
FT   TRANSMEM    260    277       5 (POTENTIAL).
FT   TRANSMEM    313    330       6 (POTENTIAL).
FT   TRANSMEM    342    363       7 (POTENTIAL).
FT   TRANSMEM    396    415       8 (POTENTIAL).
FT   TRANSMEM    445    463       9 (POTENTIAL).
FT   TRANSMEM    480    500       10 (POTENTIAL).
FT   TRANSMEM    521    540       11 (POTENTIAL).
FT   TRANSMEM    560    578       12 (POTENTIAL).
FT   DOMAIN      579    635       CYTOPLASMIC (POTENTIAL).
FT   CARBOHYD    192    192       N-LINKED (GLCNAC. . .) (POTENTIAL).
FT   CARBOHYD    197    197       N-LINKED (GLCNAC. . .) (POTENTIAL).
SQ   SEQUENCE   635 AA;  70631 MW;  5D6A944035103787 CRC64;

  Query Match             38.5%;  Score 43.5;  DB 1;  Length 635;
  Best Local Similarity   56.2%;  Pred. No. 17;
  Matches    9;  Conservative    2;  Mismatches    2;  Indels    3;  Gaps    2;

Qy          3 DMLRCMLGRVYRPC-W 17
              | : ||:|  |||| |
Db        505 DDIACMIG--YRPCPW 518


Search completed: June 12, 2003, 15:28:31
Job time : 26 secs
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